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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHEVALIER, ALICIA ANN	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,733	OEN, JOSHUA	
	Examiner	Art Unit	
	Alicia Chevalier	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *23-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

RESPONSE TO AMENDMENT

1. Claims 1-30 are pending in the application, claims 23-30 are withdrawn from consideration.

REJECTIONS

2. **The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

Claim Rejections - 35 USC § 102

3. Claims 1-7, 9, 10, 14, 15, 17, and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Dinter et al. (U.S. Patent No. 5,759,649).

Regarding Applicant's claims 1 and 14, Dinter discloses an apparatus (*plastic packaging, title*) comprising a heat source (*packed product, col. 2, lines 25-28*), a heat sink (*atmospheric air out side of the packaging, figure 5*) and a unitary layer of electrically non-conductive material (*inner layer, col. 2, lines 46-50*).

The electrically non-conductive material is deemed to have a first surface that is adjacent the heat sink and deemed to have a second surface adjacent the heat source. The material further comprises a plurality of openings communicatively (*col. 2, line 34*) coupled between the first surface and the second surface and the combined area of the plurality of openings are deemed to comprise a selected percentage of the first surface (*figure 2 and 3*).

Regarding Applicant's claims 2 and 3, Dinter discloses that selected ones of the plurality of openings comprise a regular geometric shape which is substantially circular (*figure 3*).

Regarding Applicant's claims 6, 7, 21 and 22, using the spacing and size of the openings (*col. 3, lines 14-18*) the area of the openings was calculated to be between 0 and 100%. This range encompasses both of Applicant's claimed ranges "at least about 90% of the first surface" and "no more than about 95% of the first surface."

Regarding Applicant's claims 9 and 15, Dinter discloses that the electrically non-conductive material is a polymer (*col. 2, lines 54-56*).

Regarding Applicant's claims 10 and 17, Dinter discloses a thermal interface material located between the unitary layer of electrically non-conductive material and the heat sink (*container outer layer, col. 2, line 37*).

Regarding Applicant's claim 19, Dinter discloses that the heat source comprises a die (*filling tube, col. 2, line 25*).

Regarding Applicant's claim 20, Dinter discloses that the heat sink comprises a heat spreader, since atmospheric air dissipates, i.e. spreads heat.

4. Claims 1, 2, 8, 12, 13, 14, 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Crandall et al. (U.S. Patent No. 5,474,827).

Regarding Applicant's claims 1 and 14, Crandall discloses an apparatus (*article of wearing apparel, col. 10, lines 7-17*) comprising a heat source (*wearer/human, i.e. body heat*), a heat sink (*atmospheric air*) and a unitary layer of electrically non-conductive material (*glass microspheres, col. 7, lines 44-45*).

The electrically non-conductive material is deemed to have a first surface that is adjacent the heat sink and deemed to have a second surface adjacent the heat source. The material further comprises a plurality of openings communicatively (*spaces between microspheres, figure 1*) coupled between the first surface and the second surface and the combined area of the plurality of openings are deemed to comprise a selected percentage of the first surface (*figure 1*).

Regarding Applicant's claim 2, from figures 3A and 3B in Crandall it can be seen that the openings between the microspheres have a regular geometric shape, substantially diamond shaped with curved edges.

Regarding Applicant's claim 8, Crandall discloses wherein the combined area of the plurality of openings comprises a selected percentage of the first surface and the second surface, wherein the selected percentage of the second surface is different from the selected percentage of the first surface (*figure 1*). Due to the curvature of the microspheres the opening area is greater on the second surface of the unitary layer then the first surface.

Regarding Applicant's claim 12, Crandall discloses that the electrically non-conductive material is a plurality of glass beads (*col. 7, lines 44-45 and col. 13, line 10*).

Regarding Applicant's claim 13, Crandall discloses a thermally conductive material located in selected ones of the plurality of openings, the thermally conductive material selected from at least one of a solid, a liquid, and a paste (*reflective metal, col. 7, lines 59-61 and figure 1*).

Regarding Applicant's claim 16, Crandall discloses that the unitary layer has substantially uniform thickness of about 0.05 mm, since the reference discloses that the

microspheres have a diameter, i.e. thickness, of about 30-200 micrometers (*col. 7, lines 50-52*), which is equivalent to 0.03-0.2 mm.

Regarding Applicant's claim 20, Crandall discloses that the heat sink comprises a heat spreader, since atmospheric air dissipates, i.e. spreads heat.

5. Claims 1-5, 7-9, 11, 14-16, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Hisanaka et al. (U.S. Patent No. 6,117,524).

Regarding Applicant's claims 1 and 14, Hisanaka discloses an apparatus (*skin-contactable sheet for disposable diapers and sanitary napkins, col. 1, lines 7-9*) comprising a heat source (*wearer/human, i.e. body heat*), a heat sink (*atmospheric air*) and a unitary layer of electrically non-conductive material (*composite web, col. 6, line 18*).

The electrically non-conductive material is deemed to have a first surface that is adjacent the heat sink and deemed to have a second surface adjacent the heat source. The material further comprises a plurality of openings communicatively (*apertures and liquid guiding passages, figure 5*) coupled between the first surface and the second surface and the combined area of the plurality of openings are deemed to comprise a selected percentage of the first surface (*figure 5*).

Regarding Applicant's claims 2-5, Hisanaka discloses that selected ones of the plurality of openings comprise a regular geometric shape which is substantially circular or square, or irregular geometric shape (*figure 5*).

Regarding Applicant's claims 7 and 22, Hisanaka discloses that the combined area of the plurality of openings comprises not more than about 95% of the first surface (*col. 6, lines 30-31 and figure 5*).

Regarding Applicant's claim 8, Hisanaka discloses wherein the combined area of the plurality of openings comprises a selected percentage of the first surface and the second surface, wherein the selected percentage of the second surface is different from the selected percentage of the first surface, since the reference shows that the polymeric web has additional apertures not in the fibrous layer (*figure 5*).

Regarding Applicant's claims 9 and 15, Hisanaka discloses that the electrically non-conductive material is a polymer (*col. 5, line 1 and col. 5, line 51*).

Regarding Applicant's claim 11, Hisanaka discloses that the electrically non-conductive material is a non-woven material (*col. 5, line 51*).

Regarding Applicant's claim 16, Hisanaka discloses that the unitary layer has substantially uniform thickness of about 0.05 mm (*col. 4, line 17*).

Regarding Applicant's claim 20, Hisanaka discloses that the heat sink comprises a heat spreader, since atmospheric air dissipates, i.e. spreads heat.

6. Claims 1, 2, 4, 9, 14, 15, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Brady et al. (U.S. Patent No. 6,140,146).

Regarding Applicant's claims 1 and 14, Brady discloses an apparatus (*apparatus, col. 3, line 33*) comprising a heat source (*integrates circuit including a transponder, col. 3, lines 45-51*), a heat sink (*atmospheric air*) and a unitary layer of electrically non-conductive material (*flexible tape or film, col. 3, lines 61-62*).

The electrically non-conductive material is deemed to have a first surface that is adjacent the heat sink and deemed to have a second surface adjacent the heat source. The material further comprises a plurality of openings communicatively (*aperture, col. 4, 47*) coupled between the

first surface and the second surface and the combined area of the plurality of openings are deemed to comprise a selected percentage of the first surface (*figure 3a*).

Regarding Applicant's claims 2 and 4, Brady discloses that selected ones of the plurality of openings comprise a regular geometric shape which is substantially square (*figure 3a*).

Regarding Applicant's claims 9 and 15, Brady discloses that the electrically non-conductive material is a polymer (*col. 5, line 1 and col. 5, line 51*).

Regarding Applicant's claim 18, Brady discloses that the heat source comprises an integrated circuit package including a transponder (*col. 3, lines 45-51*).

Regarding Applicant's claim 20, Brady discloses that the heat sink comprises a heat spreader, since atmospheric air dissipates, i.e. spreads heat.

ANSWERS TO APPLICANT'S ARGUMENTS

7. Applicant's arguments in the response filed June 9, 2005 regarding the 35 U.S.C. 102 rejections over Dinter, Crandall, Hisinaka and Brady of record have been carefully considered but are deemed unpersuasive.

Applicant argues that Dinter does not teach the existent of "a heat sink." Applicant also asserts that a heat sink is a mounting base, usually metallic, that dissipates, carries away, or radiates into the surrounding atmosphere that heat generated within a semiconductor device.

The Merriam-Webster OnLine Dictionary defines heat sink as a substance or device for the absorption or dissipation of unwanted heat. Therefore, since Applicant has not claimed that the heat sink is a mounting base, the term is given its broadest reasonable the broadest reasonable interpretation consistent with the written description in applicant's specification as it would be

interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994), i.e. a heat sink unless specifically specified is a substance or device for the absorption or dissipation of unwanted heat. Therefore, since atmospheric air is a substance that will dissipate unwanted heat, it is considered to be a heat sink.

Furthermore, the fact that Dinter more does not label the atmospheric air as a "heat sink" and is devoid of the term "sink" is irrelevant since it clearly teaches a type of heat sink, namely atmospheric air.

Applicant further argues that there was also a lack of teaching regarding a heat sink with respect to Crandall, Hisanaka, and Brady. Specifically Applicant argues that air may not act as a heat sink on its own.

The Examiner respectively disagrees. As shown be the definition from the Merriam-Webster OnLine Dictionary a heat sink is a substance for dissipation of unwanted heat, which air can do.

Applicant argues that Dinter does not teach the existent of a "unitary layer of electrically non-conductive material." Applicant argues that Dinter's inner layer must be used in conjunction with an electrically conductive intermediate layer. Applicant further states that Hisanaka is a composite web.

The fact that Dinter and Hisanaka include additional structure not claimed is irrelevant, since Applicant uses the open language "comprising" and discloses all the limitations of the

instant base claims. Furthermore, Applicant discloses on page 4, lines 5-8, the "apparatus" can have more then one layer of non-conductive material.

Applicant argues that the size of the openings in the surface of the unitary layer in Dinter and Hianaka is incorrect and that the combined opening area over the surface is substantially less than 90% and 95%.

The Examiner respectfully disagrees. Using all possible combinations in the ranges provided in Dinter and Hianka, the examiner stands by her assertion. Furthermore, for argument sake if Applicant is correct, it would still meet the limitation of no more than about 95% of the first surface area.

Applicant argues that a "thermal interface material" is used to fill the gaps between a thermal transfer surfaces, such as between microprocessors and heatsinks, in order to increase the thermal efficiency.

Applicant's define is not the sole definition of a thermal interface material. Giving the term the broadest reasonable interpretation consistent with the written description in applicant's specification as it would be interpreted by one of ordinary skill in the art, it is merely a layer which next to the unitary layer which may comprises electrically conductive or non-conductive material. Furthermore, claims 10 and 17 specifically recite that the thermal interface material is located between the unitary layer and the heat sink, and does not recite that it "fills" the openings of the unitary layer.

Applicant argues that a die is "one unit on a wafer separated by scribe lines ..." and Dinter does not teach this.

Merriam-Webster's OnLine dictionary defines die as any of various tools or devices for imparting a desired shape, form, or finish to a material or for impressing an object or material: as **a** (1) **:** the larger of a pair of cutting or shaping tools that when moved toward each other produce a desired form in or impress a desired device on an object by pressure or by a blow (2) **:** a device composed of a pair of such tools **b :** a hollow internally threaded screw-cutting tool used for forming screw threads **c :** a mold into which molten metal or other material is forced **d :** a perforated block through which metal or plastic is drawn or extruded for shaping. Since Applicant does not claim the specific die argued in the response any tool meeting the above definition is considered to be a die, such as Dinter's filling tube.

Applicant's argument regarding air as a heat spreader and heat sink have already been addressed.

Applicant argues that the microspheres of Crandall are symmetric and therefor one side of the microspheres must be the same size as the openings on the other side.

The examiner respectfully disagrees with the assertion. As seen from figure 1 in Crandall the microspheres are embedded into the binder material less than half way. There for the three-dimensional openings that are formed at the radius of the spheres will be different on each side, i.e. the heights of the openings and diameter of the top must portion will be different.

Applicant argues that the reflective metal of Crandall is a single layer and permits no protrusion of the microspheres, thus there are no openings to be filled by the reflective metal.

As seen in Figure 1 of Crandall the reflective layer dips in and fills in the spaces between the spheres, i.e. the openings. The fact that it does not completely fill the opening is irrelevant since Applicant's are not claiming the openings are completely filled.

Applicant argues that Hisanaka does not disclose regularly shaped openings.

Applicant claims regular geometric shapes are circular which is taught by Hisanaka, see figure 5.

Applicant argues that Hisanaka does not disclose that the polymeric webs is electrically non-conductive and points to Dinter as showing polymers can be conductive.

Dinter points out that polymers are not conductive unless additives are added to make them conductive, see col. 1, lines 20-40. Therefore, since polymers are non-conductive and Hisanaka does not disclose adding any to make the polymer conductive, it is deemed to be non-conductive.

Applicant arguments regarding the composite web of Hisanaka have been addressed above.

Applicant argues that Brady does not teach a plurality of openings between the first surface adjacent the heat sink and a second surface adjacent the heat source.

This argument is not commensurate in scope with the claims. Claim 1 merely recites "a unitary layer ... having a first surface adjacent a heat sink, a second surface adjacent a heat source, and a plurality of openings communicatively coupled between the first and second surfaces." This does not claim that the holes must be adjacent the heat sink and heat source, just that the unitary layer must be near the sink and source and have holes.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (571) 272-1490. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alicia Chevalier

8/17/05